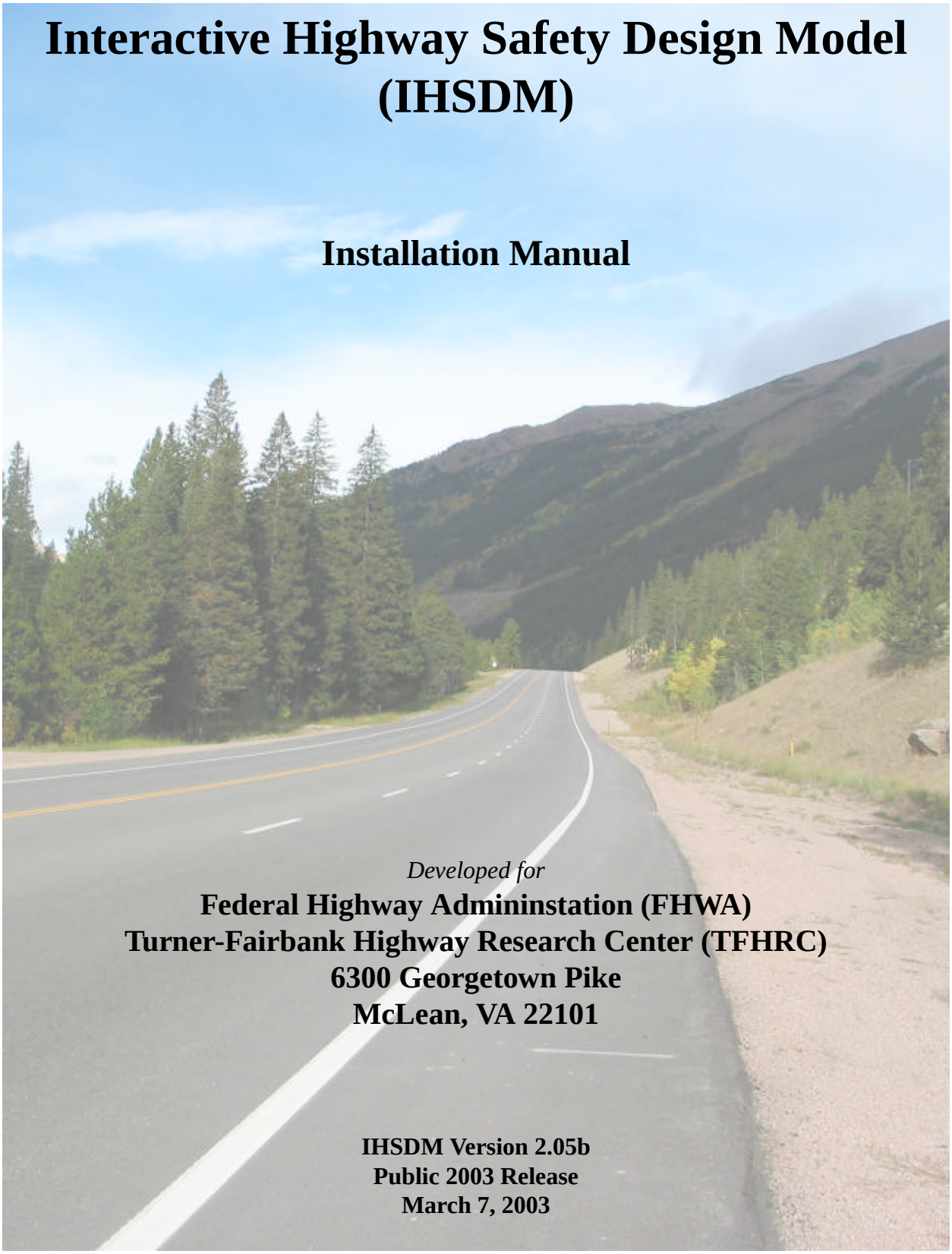
# Interactive Highway Safety Design Model (IHSDM)

## Installation Manual



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# 1. Introduction

This manual provides instructions for installing the IHSDM software, which includes setting the system's configuration through the Configuration Utility. The material in this manual is also summarized in the Getting Started Guide.

The current release of IHSDM includes:

- Policy Review Module (version 2.03c, Jan 08, 2003)
- Design Consistency Module (version 2.01d, Nov 15, 2002)
- Crash Prediction Module (version 1.00e, Dec 13, 2002)
- Traffic Analysis Module (version 1.00a, Mar 07, 2003)
- Intersection Review Module (version 1.00a, Mar 07, 2003)
- Configuration Tool (version 1.06b, Jul 30, 2001)
- Administration Tool (version 1.00h, Aug 23, 2002)
- Basic Services (version 2.05b, Mar 07, 2003)

## 1.1 Minimum System Requirements

The current implementation of IHSDM is targeted to the Microsoft Windows 95/98/NT/2000/ME/XP environment. The minimum system configuration is:

- Software
  - Microsoft Windows 95 (Service Release 1 is recommended), Windows 98 (Second Edition recommended), Windows NT/4.0 (Service Pack 3, or better is required), Windows 2000 Professional, Windows Millennium Edition (ME) or Windows XP.
  - HTML browser (e.g., Netscape Navigator (`http://home.netscape.com/computing/download/index.html`), Mozilla (`http://www.mozilla.org/releases/`) or Microsoft Internet Explorer (`http://www.microsoft.com/windows/ie/download/default.asp`))
- Hardware
  - 300 MHz x86 compatible processor
  - 64 MB RAM (128 MB preferred)
  - 800 x 600 high color (16 bit) display
  - 300 MB available disk space

The software development team is using Windows 2000 Professional and XP Professional. The independent verification and validation team uses Windows NT/4.0. IHSDM has not been tested extensively on Windows 95, ME or XP Home.

Memory requirements are more significant than processor requirements. For example, performance of IHSDM on 200 MHz machine with 128 MB of RAM will be nearly as good as a 300 MHz machine with 64 MB of RAM.

The disk requirements for IHSDM vary based on the configuration of the operational environment of IHSDM. A stand-alone operational environment can require as much as 120 MB of disk space. The server machine in a server operational environment will also require as much as 120 MB of disk space. The client machines in a server operational environment will each

require from 10 MB to 50 MB of disk space.

## 1.2 Implementation Language

IHSDM is implemented in the Java 2 programming language. IHSDM has been tested in a number of environments including

- Windows 95/98/NT/2000/ME/XP using various versions of the Sun Microsystems Java Runtime Environment (JRE 1.1, 1.2, 1.3, 1.4).
- Sun JRE 1.2 for Solaris (Sparc).
- Various versions of RedHat Linux under various Blackdown (`http://www.blackdown.org/`) ports of the Sun JRE.

However, the only platform officially **supported** is Windows 95/98/NT/2000/ME/XP using the Sun JRE (1.4.1). The primary development platform is now *Windows 2000* and *Windows XP Professional*. The primary test platform is *Windows NT/4.0*.

All IHSDM *full* distributions include all of the Java runtime software required to run IHSDM. The following packages are included with a full IHSDM distribution:

- The Sun JRE (1.4.1) and associated HotSpot Java Virtual Machine. [Copyright] [License] [Readme] [Changes]
- The Sun Java Advanced Imaging API (1.1.1). [Copyright] [License] [Readme]
- The Xerces-J (release 2.0.1) XML parser from the Apache Software Foundation. [License]

## 1.3 Operational Environments

IHSDM may be configured in one of two basic operational environments:

- A single workstation environment (*stand-alone*)
- A client-server workstation environment (*server*)

In the *stand-alone* operational environment, all files related to IHSDM reside on the workstation. These files include the Java Runtime Environment (JRE), the IHSDM Java archive (`IHSDM.jar`), and IHSDM runtime environment (data dictionaries and policy files). The disk requirements are about 120 MB (up to 200 MB depending on the filesystem and cluster size). The *stand-alone* operational environment offers the best runtime performance but requires the most long-term maintenance and organizational resources. The *stand-alone* operational environment is recommended for all test and evaluation deployments of IHSDM.

In the *server* operational environment, all files related to the IHSDM and the Java Runtime Environment are maintained on a server workstation. The IHSDM client machines may be configured as *hybrid* clients or *thin* clients.

- Hybrid clients include the JRE, the IHSDM bootstrap executables and user-specific IHSDM data files.
- Thin clients include only the IHSDM bootstrap executables and user-specific IHSDM data files.

The minimum disk requirements for the server are about 120 MB (up to 200 MB depending on the filesystem and cluster size). The client machine disk requirements are directly related to the number of projects and highway element files maintained by the client machine user. Typical requirements may be on the order of 50 MB for a hybrid client and 10 MB for a thin client. The *hybrid* client offers better runtime performance than the *thin* client. **In all environments,**

**IHSDM executes on the client machine**.

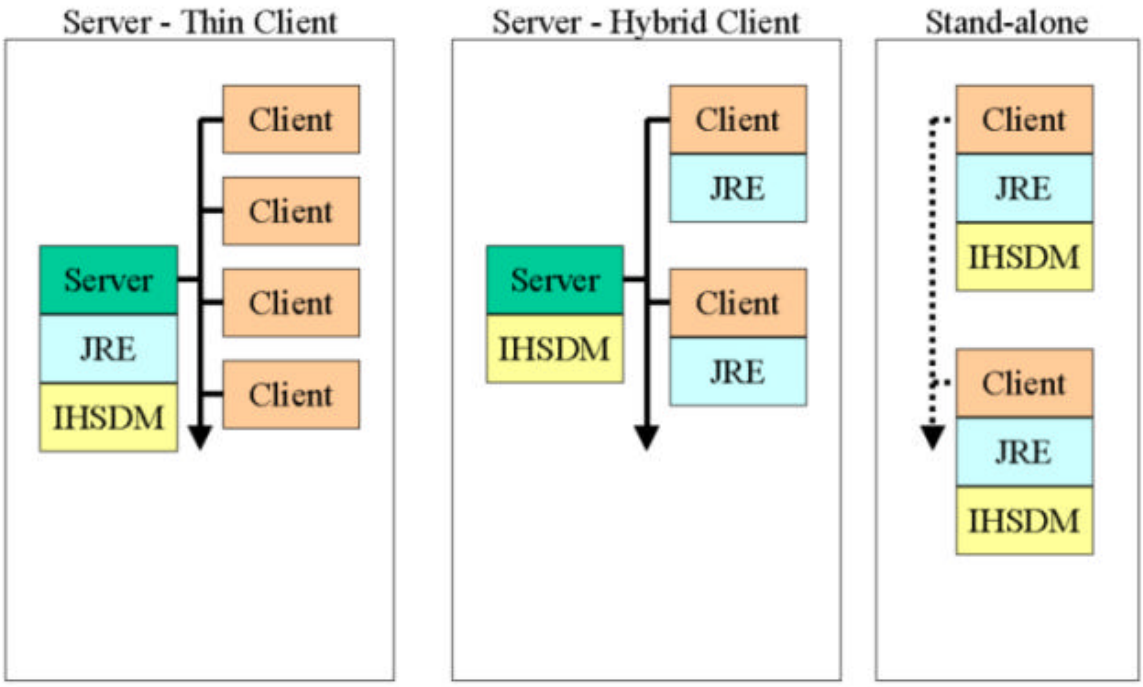


**Figure 1 IHSDM Operational Environments**

If an organization is networked, the server operational environment offers several advantages:

- The total disk requirements for the organization installation are reduced.
- The effort required to install IHSDM is minimized.
- Maintenance requirements are reduced. Since the IHSDM is still under development; updates to the product will be relatively frequent. In the server environment, only the installation on the server will typically need to be updated.

The major disadvantage to the server environment is reduced runtime performance, especially during the initial program start-up. The performance difference is barely noticeable on 100 Mbit/sec networks, but can be significant on a heavily loaded 10 Mbit network.

## 1.4 Directory Structure

Three categories of directories are used by IHSDM at runtime: the IHSDM system home directory, the individual user's IHSDM home directories, and project directories. In the single workstation environment, all directories generally reside on a single machine. In the client-sever environment, the IHSDM system home directory is on the server, and each user will have a home directory on a client machine. In either environment, more than one user may be configured on a machine.

- The IHSDM **system home** directory is the root directory where system files associated with the IHSDM are maintained. The files maintained in this directory and its subdirectories include system configuration files, the Java Runtime Environment (JRE), Java archives (*.jar), and system documentation. This directory should be located on a drive with at least 120 MB of available storage. Refer to Directory Organization in the Installation Manual for more details on the organization of the IHSDM system home.

- The IHSDM **user home** directory is where user-specific IHSDM files are maintained. The files maintained in the user's home directory contain diagnostic information (stack trace) and the user's properties and preferences.
- IHSDM **project directories** contain project files, analysis files and reports as well as status logs. Multiple users may share project directories, but generally, the project directory is a subdirectory of the user home directory.

## 1.5 Directory Organization

Two basic forms of the IHSDM system are packaged:

- The **executable distributions** of IHSDM includes the Sun Microsystems, Inc. (`http://www.java.sun.com/`) Java Runtime Engine (JRE), a Java archive (`ihsdm.jar`) of the IHSDM classes, and user documentation. These distributions of IHSDM can be used on any Windows 95/98/NT based machine by installing the basic distributions (refer to the Getting Started Guide). The current implementation is based on JDK version 1.4.1. The Beta test software and developer distributions are both executable distributions.
- The **source distribution** of IHSDM includes a complete set of source code, class files and documentation. It is configured to be used and maintained by using a Java Integrated Development Environment (IDE) such as VisualCafe. The source distribution may also be maintained using the Java Development Kit (available from Sun) and a standard text editor such as *emacs*.

The two categories of IHSDM distributions have a different directory structure.

### 1.5.1 Executable Distribution Directory Organization

The following structure is used for the **system home** directory (folder) in the executable distributions. This directory is the root directory where all IHSDM system files are maintained. The files maintained in this directory and its subdirectories include:

- system configuration files,
- the Java Runtime Environment (JRE),
- Java archives (*.jar),
- and system documentation.

This directory should be located on a drive with at least 120 MB of available storage.

The IHSDM system home directory is referred to as **`[ihsdm.home]`** in the following table.

**Table 1. Executable Distribution (System Home) Directory Organization**

| Directory | Description |
|---|---|
| **[ihsdm.home]** | IHSDM system home directory contains system blobs (e.g., `system.blob`, `server.blob`), the major invocation commands (e.g., `ihsdm.exe` and `prm.exe`) and the system property file `ihsdm.props`. |
| **[ihsdm.home]/bat** | Windows command scripts directory contains operations and maintenance support {link user_command_scripts "" "command scripts" "."} |
| **[ihsdm.home]/bin** | Java Runtime Environment (JRE) binary directory has JRE EXEs and DDLs. |
| **[ihsdm.home]/lib** | JRE library directory has JRE and IHSDM java archives (e.g., `IHSDM.jar`). |
| **[ihsdm.home]/html** | Documentation directory contains documentation (May be relocated using the `ihsdm.document.home` property). |
| **[ihsdm.home]/templates** | IHSDM template directory contains files used by the Configuration Utility. |
| **[ihsdm.home]/geopak_to_ihsdm_api** | GEOPAK to IHSDM directory contains code and documentation for the GEOPAK-to-IHSDM API. |
| **[ihsdm.home]/examples** | Examples directory contains example files for use with the GEOPAK-to-IHSDM API. |
| **[ihsdm.home]/policy** | IHSDM/PRM policy directory contains policy text files used to build PRM policy files. |
| **[ihsdm.home]/config** | IHSDM/DCM configuration directory contains configuration text file used to build the DCM configuration file. |
| **[ihsdm.home]/highways** | IHSDM highways directory contains sample highway text files used to build a few sample highway files. |
| **[ihsdm.home]/datadict** | IHSDM data dictionary directory contains data dictionary text files used to build the system data dictionary binary files. |

### 1.5.2 Source Distribution Directory Organization

The following directory structure is used in the source distribution. The root directory for these subdirectories is specified with the environment variable **`IHSDM_ROOT`** (Windows) or **`I_ROOT`** (Unix/Linux). The root of the source directory is referred to as **`[ihsdm.root]`** in the following tables.

## Table 2. Source Distribution Directory Structure

| Directory | Description |
|---|---|
| **[ihsdm.root]** | The IHSDM source root directory. |
| **[ihsdm.root]/doc** | Documentation directory. |
| **[ihsdm.root]/doc/html** | HTML documentation directory. |
| **[ihsdm.root]/doc/html/prog** | IHSDM Programmer's Manual HTML files. |
| **[ihsdm.root]/doc/html/prog/generated** | IHSDM JavaDoc Application Program Interface HTML files. |
| **[ihsdm.root]/doc/html/user** | IHSDM User's manual HTML files. |
| **[ihsdm.root]/doc/html/prm** | PRM Programmer's Manual HTML files. |
| **[ihsdm.root]/doc/html/prm/javadoc** | PRM JavaDoc Application Program Interface HTML files. |
| **[ihsdm.root]/doc/html/dcm** | DCM Programmer's Manual HTML files. |
| **[ihsdm.root]/doc/html/dcm/javadoc** | DCM JavaDoc Application Program Interface HTML files. |
| **[ihsdm.root]/doc/html/dd** | IHSDM data dictionary HTML files. |
| **[ihsdm.root]/dos** | Windows development command scripts. |
| **[ihsdm.root]/templates** | IHSDM template files used by Configuration Utility. |
| **[ihsdm.root]/policy** | IHSDM/PRM policy text files used to build policy blobs. |
| **[ihsdm.root]/highways** | IHSDM sample highway text files used to build sample highway blobs. |
| **[ihsdm.root]/datadict** | IHSDM data dictionary text files used to build the system blob. |
| **[ihsdm.root]/src** | IHSDM source files. |
| **[ihsdm.root]/src/invoke** | IHSDM invoke (C language) program source files. |
| **[ihsdm.root]/src/sdn** | IHSDM Software Design Notation (SDN) tool source files. |
| **[ihsdm.root]/src/jff** | Java File Formater tool source files. |
| **[ihsdm.root]/src/jrsc** | Java Revision Source Control tool source files. |
| **[ihsdm.root]/src/ihsdm** | IHSDM java source files and root package (ihsdm). |
| **[ihsdm.root]/src/ihsdm/dict** | data dictionary package (ihsdm.dict). |
| **[ihsdm.root]/src/ihsdm/exchange** | [ihsdm.root]/src/ihsdm/io |
| **input/output package (ihsdm.io).** | [ihsdm.root]/src/ihsdm/io/parser |
| **data dictionary parser package (ihsdm.io.parser).** | [ihsdm.root]/src/ihsdm/master |
| **Master Control Module package (ihsdm.master).** | [ihsdm.root]/src/ihsdm/prm |
| **Policy Review Module package (ihsdm.prm).** | [ihsdm.root]/src/ihsdm/prm/policy |
| **PRM Policy package (ihsdm.prm.policy).** | [ihsdm.root]/src/ihsdm/prm/output |
| **PRM Reporting package (ihsdm.prm.output).** | [ihsdm.root]/src/ihsdm/dcm |
| **Design Consistency Module package (ihsdm.dcm).** | [ihsdm.root]/src/ihsdm/dcm/graph |

| Directory | Description |
|---|---|
| **DCM graphics package (ihsdm.dcm.graph).** | [ihsdm.root]/src/ihsdm/cpm |
| **Crash Prediction package (ihsdm.cpm).** | [ihsdm.root]/src/ihsdm/idrm |
| **Intersection Diagnostic Review Module package (ihsdm.idrm).** | [ihsdm.root]/src/ihsdm/resources |
| **general support package (ihsdm.resources).** | [ihsdm.root]/src/ihsdm/resources/tools |
| **general support tools package (ihsdm.resources.tools).** | [ihsdm.root]/src/ihsdm/resources/tools/makeblob |
| **MakeBlob support Utility package (ihsdm.resources.tools.makeblob).** | [ihsdm.root]/src/ihsdm/resources/tools/vcr |
| **session recorder/playback package (ihsdm.resources.tools.vcr).** | [ihsdm.root]/src/ihsdm/roadway |
| **highway/highway representation package (ihsdm.roadway).** | [ihsdm.root]/src/ihsdm/view |
| **View data support package (ihsdm.view).** | [ihsdm.root]/src/ihsdm/view/guibuilder |
| **GUI support package (ihsdm.view.guibuilder).** | [ihsdm.root]/src/ihsdm/view/splash |
| **splash screen package (ihsdm.view.splash).** | [ihsdm.root]/src/ihsdm/view/roadviewer |
| **highway viewer package (ihsdm.view.roadviewer).** | [ihsdm.root]/unix |

## 1.6 IHSDM Data Organization Concepts

For detailed information on how the data is organized in the IHSDM (users, projects, and analyses) and how external two-lane rural highway data interacts with these data organization levels refer to the IHSDM Data Organization Concepts in the Running IHSDM Software Manual.

# 2. Software Installation

The basic steps to establish an operational version of IHSDM on a new computer include:

1. Download a copy of the current full IHSDM distribution from the IHSDM Public Software Web Site (`http://216.161.62.248/ihsdm_public`).
2. Unpack the distribution on a target machine.
3. Configure the IHSDM system for one of three operational environments.

The IHSDM software can be installed in a single or networked workstation environment.

## 2.1 Distributions

The categories of end user distributions of IHSDM currently available at the IHSDM Public Software Web Site (`http://216.161.62.248/ihsdm_public`) are list below.

- The **full** distributions include all the files required to install and test IHSDM. These distributions include a Java Runtime Environment (JRE) from Sun Microsystems, Inc. (`http://www.java.sun.com`), HTML-based documentation and all the IHSDM-specific files needed to run the Policy Review Module (PRM) and the Design Consistency Module (DCM). The full distributions are packaged into a single Window's self-extracting archive file. Once expanded and installed, the JRE and IHSDM files require about 120 MB (up to 200 MB depending on filesystem and cluster sizes) of disk storage.

- The **update** distributions include all the IHSDM-specific files (documentation, code and runtime environment) required to *update* an existing installed version of the IHSDM to a more current version. These update distributions do not include a JRE. The update distributions are packaged as a single Window's self-extracting archive file. The update distribution must be expanded/installed into a directory that contains a full distribution.
- The **patch** distributions include files to update a previously installed full distribution with corrections to defects and software enhancements. Patch distributions do not include the Java Runtime Environment (JRE) or HTML-based documentation. A patch distribution is packaged as a single Windows installer archive.
- The **PDF**Manuals distributions include many of the IHSDM manuals formatted in Adobe Portable Document Format (PDF) for duplex (i.e., two-sided) printing. The PDF manuals distribution is an optional distribution file for users who would like to view the manuals in PDF format.
- The **hybrid** distributions include all the third-party Java runtime files and bootstrap executables required by IHSDM. This distribution is required only when configuring a hybrid client machine in a server operational environment.
- The **thin-client** distributions include the IHSDM bootstrap executables. This distribution is required only when configuring a *thin client* machine in the server operational environment.

## 2.2 Installing a Full Distribution

To install the current full distribution IHSDM software, perform the following steps:

1. Download the current full distribution from the IHSDM Public Software Web Site (`http://216.161.62.248/ihsdm_public`).
2. Unpack the archive by double-clicking on the self-extracting archive installation file named, for example, `BETA_200_EXE.EXE` in the Windows Explorer. The installation utility displays a dialog similar to Figure 2, *Install License Panel*.

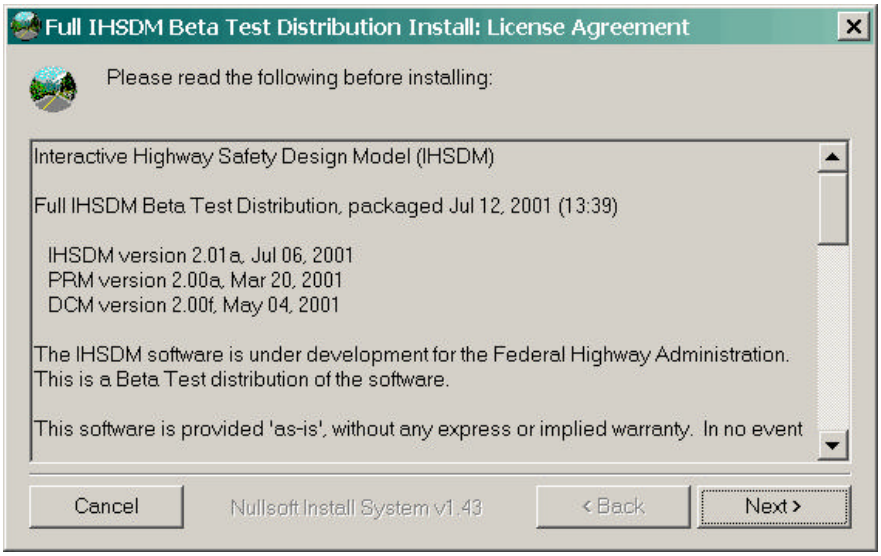


**Figure 2 Install License Panel**

This panel displays the module version information and the basic terms of the IHSDM license. After reading the information in this panel, click the **`Next`** button to proceed to the next installation panel.

3. The installation directory is specified on the second installation utility dialog similar to Figure 3, *Installation Directory*. Manually type the directory name or use the browse button to select the installation directory. The chosen directory is referred to as the **IHSDM Home Directory**.

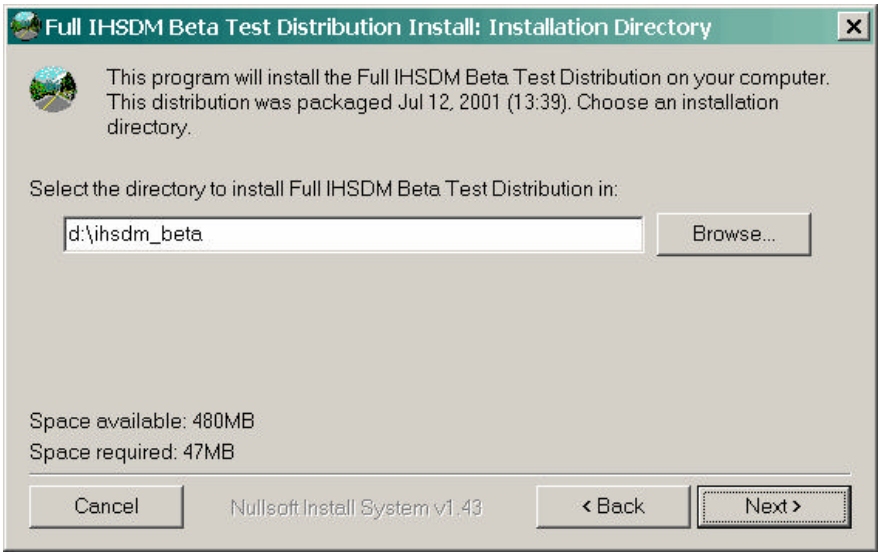


**Figure 3 Installation Directory**

After selecting the IHSDM home directory, click the **`Next`** button to begin the file extraction process. While the file extraction is being performed, a dialog similar to Figure 4, *Extraction Panel* is displayed.

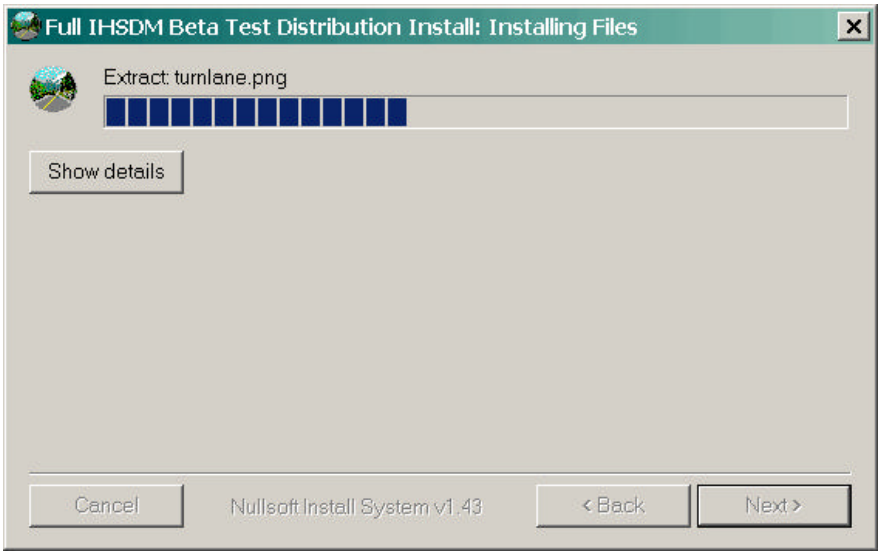


**Figure 4 Extraction Panel**

4. Once the extraction is complete, and successful, a dialog is displayed, similar to Figure 5, *Release Note Dialog*.

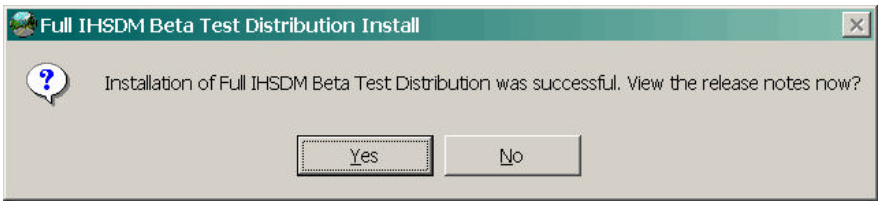


**Figure 5 Release Note Dialog**

This dialog displays the distribution release notes (in NotePad) if the **`Yes`** button is selected.

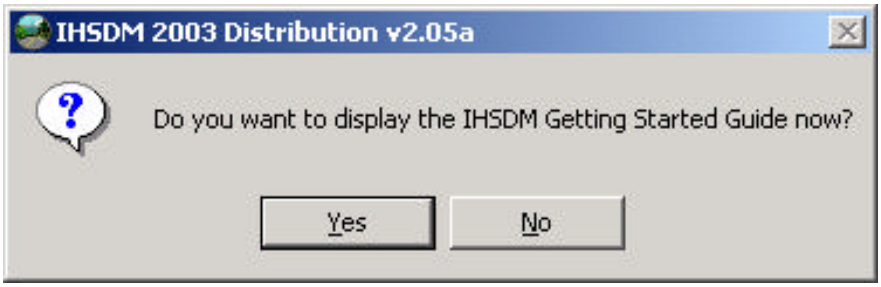


**Figure 6 Release Note Dialog**

This dialog displays the distribution Getting Started Guide (in NotePad) if the **`Yes`** button is selected.

5. Finally, a dialog similar to Figure 7, *Run Configuration Dialog* is displayed.

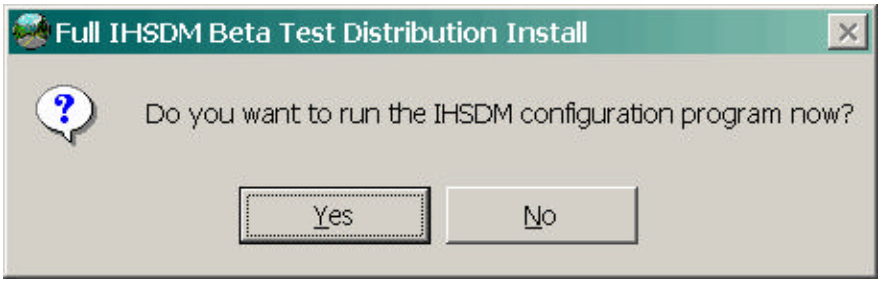


**Figure 7 Run Configuration Dialog**

This dialog runs the Configuration Utility if the **`Yes`** button is selected. This utility is discussed in detail in Section 3.1, *Running the Configuration Utility*.

6. The installation utility creates a desktop shortcut to the master IHSDM program, it also creates a Window's *Start Programs* menu for IHSDM with menu items for the IHSDM Administration Tool, Configuration Utility, Documentation, License, Release Notes, IHSDM program, and Uninstall Utility.

## 2.3 Installing an Update Distribution

The update distribution is packaged as a Window's self-extracting installation archive like other IHSDM distributions. This distribution is used to update a previously installed IHSDM distribution. The steps to install the update distribution on a machine are:

1. Download the distribution archive from IHSDM Public Software Web Site (`http://216.161.62.248/ihsdm_public`).
2. Unpack the update archive by double-clicking on the self-extracting archive file named, for example, `BETA_200_UP.EXE`, in the Window's Explorer. The self-extracting archive

displays a dialog similar to Figure 2, *Install License Panel*.

3. In the directory dialog, specify or browse for the IHSDM home directory to unpack the IHSDM update distribution. The chosen directory **must be the IHSDM Home Directory** of a previously installed IHSDM distribution.
4. Once the extraction is complete, the release notes and Configuration Utility dialogs appear. It is generally not necessary to rerun the *Configuration* Utility.

## 2.4 Installing a Client Distribution

Two client IHSDM distributions are available: the hybrid distribution, and the thin-client distribution. The steps to install either client distribution on a client machine are:

1. Download the distribution archive from IHSDM Public Software Web Site (`http://216.161.62.248/ihsdm_public`).
2. Unpack the archive by double-clicking on the self-extracting installer file named, for example, `IHSDM_CLIENT.EXE`, in the Windows Explorer. The self-extracting archive displays a dialog similar to Figure 2, *Install License Panel*.
3. In the directory, specify or browse for a directory to unpack the IHSDM client distribution.
4. The installation utility creates a desktop shortcut to the master IHSDM program, it also creates a Window's *Start Programs* menu for IHSDM with menu items for the uninstall utility and the master IHSDM program.

## 2.5 Uninstalling IHSDM

The IHSDM system installation registers the components in the Window's registry. Uninstalling IHSDM can be performed by using Uninstall Utility in the IHSDM Home Directory. There is also a link to this utility in the Window's *Start Programs* IHSDM menu. The stardard Windows setup control panel for adding/removing software can also be used to uninstall IHSDM.

# 3. IHSDM Configuration

After an IHSDM distribution has been installed on a machine, the IHSDM system must be configured using the *Configuration* Utility. The Configuration Utility may be run during the installation process, by the first invocation of the IHSDM program, or at anytime after the configuration has been initialized.

## 3.1 Running the Configuration Utility

The IHSDM Configuration Utility is used to define the operational parameters used by the IHSDM system at runtime. The Configuration Utility displays a wizard-based set of panels. The specific dialogs displayed by the utility are based on the user selected operational environment. This wizard-based window allows the operational environment and a number of configuration parameter to be specified. The **`IHSDM Configuration`** frame includes the following menu items: Help. The **`IHSDM Configuration`** frame includes the following wizard panels: Organization Name, Operational Configuration, Server Identification, User Configuration, Executable Configuration and Configuration Options.

### 3.1.1 Menu Items

The IHSDM Configuration Frame includes the following menu items:

- **Help** - This menu includes menu items to display IHSDM guides/manuals using the HTML browser or text editor. The **`Help`** menu includes the following menu items: Installation Manual (HTML), IHSDM User's Manual (HTML), IHSDM Getting Started Guide (text),

User Documentation Summary, Release Notes, IHSDM License and About IHSDM Configuration.

- **Installation Manual (HTML)** - This menu item invokes an HTML browser to display the IHSDM Installation Manual.
- **IHSDM User's Manual (HTML)** - This menu item invokes an HTML browser to display the IHSDM User's Manual.
- **IHSDM Getting Started Guide (text)** - This menu item invokes a text editor to display the IHSDM Getting Started Guide.
- **User Documentation Summary** - This menu item launches the HTML browser to display the **User Documentation Summary**. The summary contain links to all the user documentation.
- **Release Notes** - This menu item invokes a text editor to display the IHSDM release notes.
- **IHSDM License** - This menu item invokes a text editor to display the IHSDM license.
- **About IHSDM Configuration** - This menu item displays the Configuration Utility's About Box dialog.

### 3.1.2 Wizard Panels

The IHSDM Configuration Frame includes the wizard panels described in the following sections.

#### 3.1.2.1 Organization Name Panel

This panel is the initial panel displayed by IHSDM Configuration Utility. The panel displays general instructions on invoking the help mechanism in the utility. The panel also solicits the organization name.

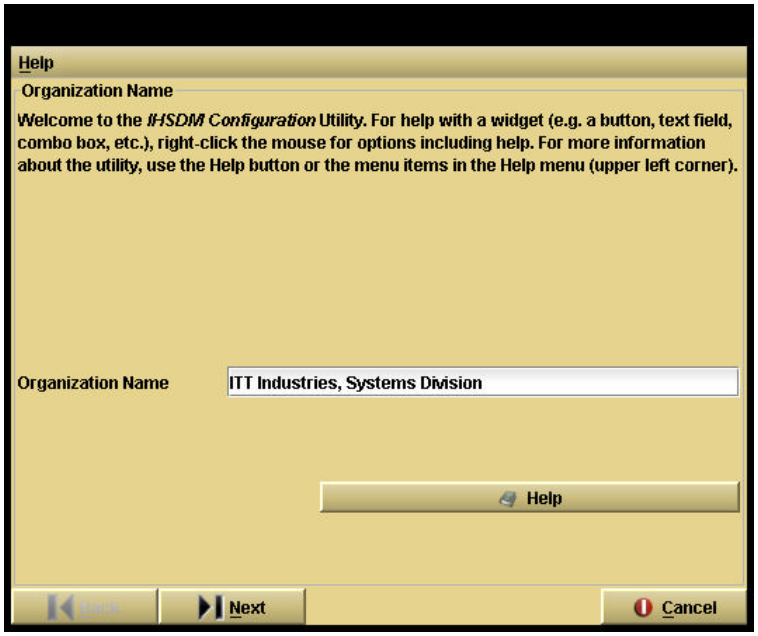


**Figure 8 Organization Name Panel**

The **`Organization Name`** wizard panel includes the following widgets: Organization Name and Help.

- **Organization Name** - Widget type: text field. The value of this item is the name of the organization, company or department for this IHSDM deployment. The value is used in IHSDM analysis reports.
- **Help** - Widget type: button. This button invokes an HTML browser to display the reference manual for this dialog.

#### 3.1.2.2 Operational Configuration Panel

This panel solicits the operational mode for the configuration. The wizard panels that follow are determined based on the operational mode.

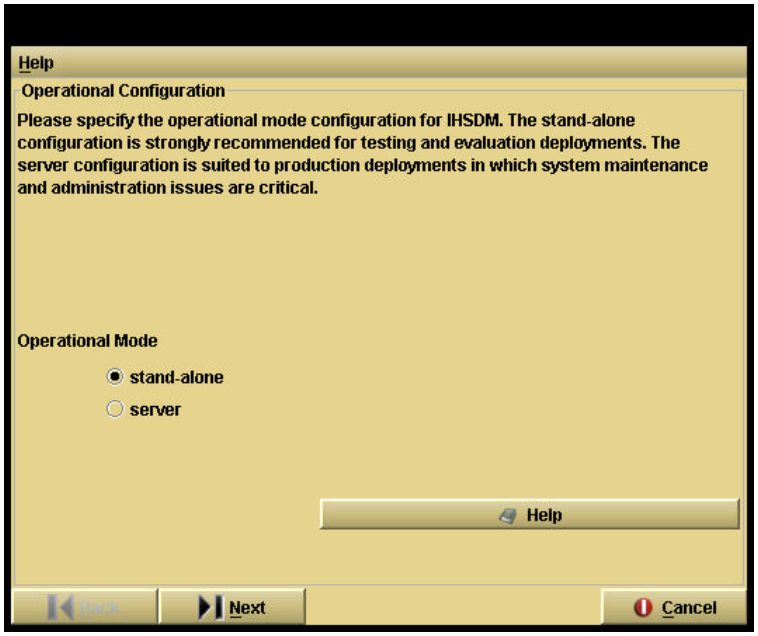


**Figure 9 Operational Configuration Panel**

The **`Operational Configuration`** wizard panel includes the following widgets: Operational Mode and Help.

- **Operational Mode** - Widget type: radio button. This specifies the operational environment mode, `server` for a server or hybrid-server operational environment; `stand-alone` for a stand-alone operational environment. The enumeration values are: **`stand-alone`** and **`server`**.
- **Help** - Widget type: button. This button invokes an HTML browser to display the reference manual for this dialog.

#### 3.1.2.3 Server Identification Panel

This panel is used to specify the server and share identification. The panel is only displayed when the operational mode has been specified as **`server`**.

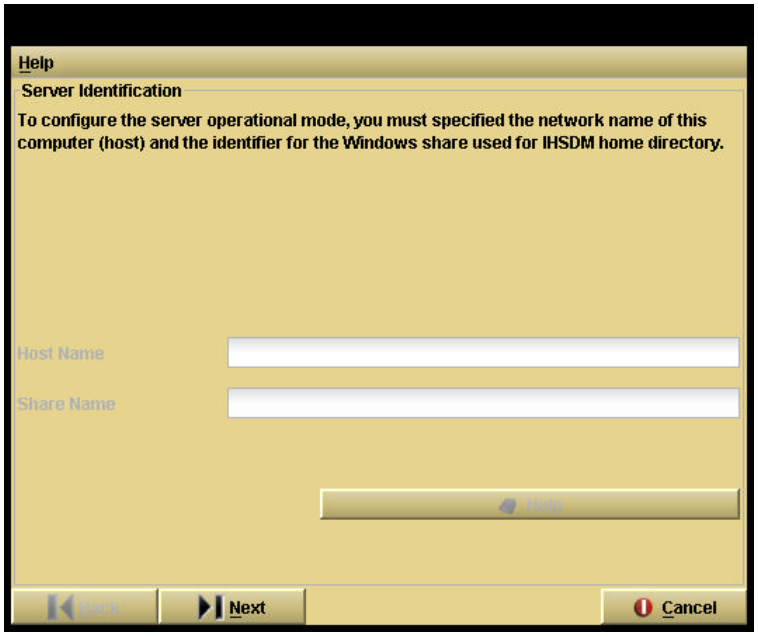


**Figure 10 Server Identification Panel**

The **`Server Identification`** wizard panel includes the following widgets: Host Name, Share Name and Help.

- **Host Name** - Widget type: text field. This item is the network host name of this machine.
- **Share Name** - Widget type: text field. This item is the network share name of the IHSDM install directory.
- **Help** - Widget type: button. This button invokes an HTML browser to display the reference manual for this dialog.

#### 3.1.2.4 User Configuration Panel

This panel is used to specify optional IHSDM user/directory pairs.

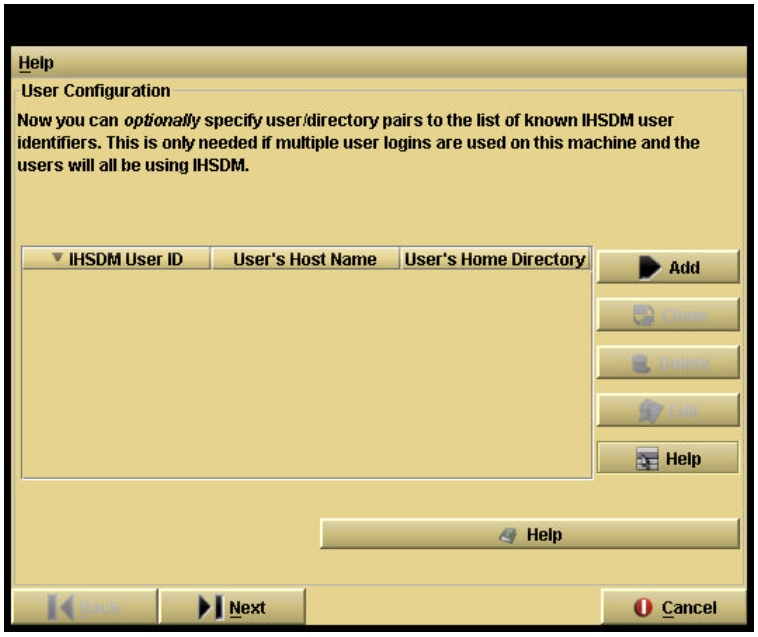


**Figure 11 User Configuration Panel**

The **`User Configuration`** wizard panel includes the following widgets: Users and Help.

- **User Configuration Data** List Box - Widget type: list box. The **`User Configuration Data`** list box includes the following items: IHSDM User ID, User's Host Name and User's Home Directory.
  - **IHSDM User ID** Item - This is a read-only field which contains the current user ID.
  - **User's Host Name** Item - The value of this item is the host (computer) name for the IHSDM user identifier. The value '*' may be used to designate any host name.
  - **User's Home Directory** Item - The value of this item is the name of the user's home directory. The value 'local' may be used to designate that the home directory is on the client machine and the path is relative to the IHSDM installation directory.
- **Help** - Widget type: button. This button invokes an HTML browser to display the reference manual for this dialog.

#### 3.1.2.5 Executable Configuration Panel

This panel is used to specify the full path to a number of ancillary programs. The panel is only displayed when the operational mode has been specified as **`stand-alone`**.

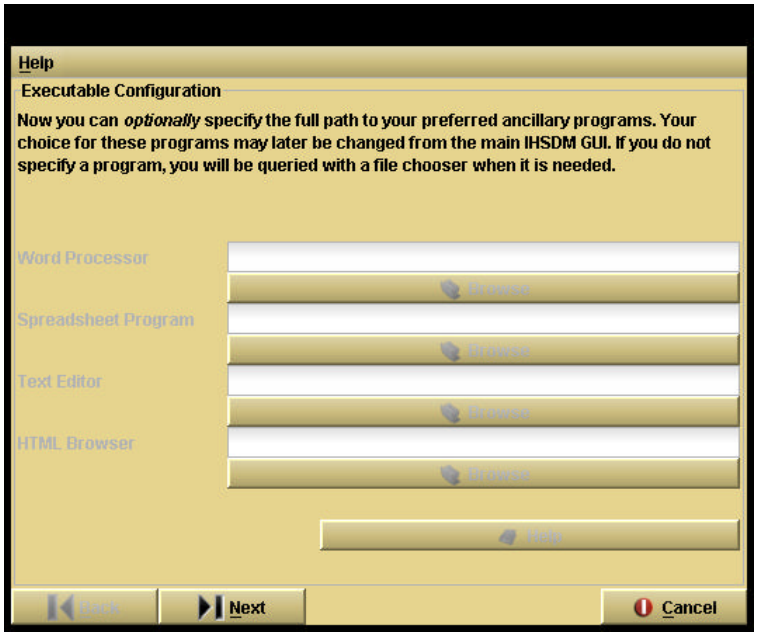


**Figure 12 Executable Configuration Panel**

The **`Executable Configuration`** wizard panel includes the following widgets: Word Processor, Spreadsheet Program, Text Editor, HTML Browser and Help.

- **Word Processor** - Widget type: text field (w/button). The value of this item is the full executable file name and path of the user's preferred word processor program.
- **Spreadsheet Program** - Widget type: text field (w/button). This is the full executable file name and path to the user's preferred spreadsheet program.
- **Text Editor** - Widget type: text field (w/button). This is the full executable file name and path of the user's preferred plain text editor.
- **HTML Browser** - Widget type: text field (w/button). This is the full executable file name and path of the user's preferred HTML browser program.
- **Help** - Widget type: button. This button invokes an HTML browser to display the reference manual for this dialog.

#### 3.1.2.6 Configuration Options Panel

This panel is used to specify several system-wide IHSDM configuration parameters. This panel is the last panel displayed by the Configuration Utility.

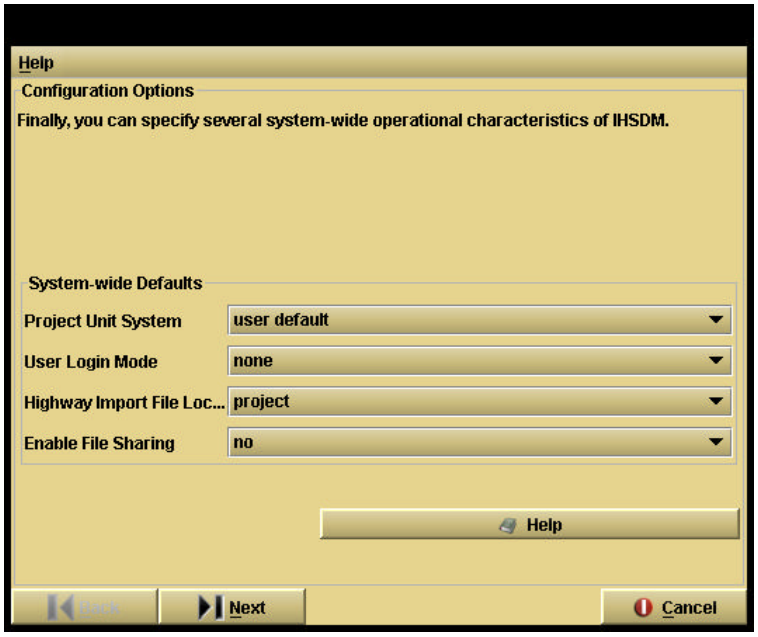


**Figure 13 Configuration Options Panel**

The **`Configuration Options`** wizard panel includes the following widgets: Project Unit System, User Login Mode, Highway Import File Location, Enable File Sharing and Help.

- **Project Unit System** - Widget type: combo box. This item specifies the unit system used for the entry and display of all values associated with the project. This unit system is used to control all outputs as well as the unit system assumed for imported datasets if no unit system is explicitly specified in the imported file. The enumeration values are:
- **`user default`** (user default unit system),
- **`Metric`** (Metric unit system) and
- **`English`** (English (Imperial) unit system).
- **User Login Mode** - Widget type: combo box. User login may be: 'require' (known user must login); 'exist' (must be known user, login if default is not known); 'default' (require login, user not always known); or 'none' (no login prompt). The enumeration values are: **`none`**, **`default`**, **`exist`** and **`require`**.
- **Highway Import File Location** - Widget type: combo box. This item specifies whether highway import files are maintained globally on the server, or locally on the client in the user home directory or the project directory. The enumeration values are: **`project`**, **`user`** and **`server`**.
- **Enable File Sharing** - Widget type: combo box. This enables files (blobs) to be shared between users and/or processes. It reduces the preformance of the system. The enumeration values are: **`no`** and **`yes`**.
- **Help** - Widget type: button. This button invokes an HTML browser to display the reference manual for this dialog.

### 3.1.3 Adding Users

IHSDM is designed such that the highest level of data organization is referred to as the *user* level. In many user organizations, the *user* level will correspond to an individual user of IHSDM. However, this level can also be associated with a work group, or any other top level organization category of workflow.

In a networked Windows environment, the default user identifier is the network login identifier. The Configuration Utility is used to specify the category of *user login* that is used when the system starts. The Configuration Utility uses a configuration flag to specify the access control used by IHSDM, based on the user identifier.

An identifier for each potential *user* of IHSDM can be entered during system configuration. Associated with each user identifier (*IHSDM User ID*) is a user home directory. If the user home directory does not exist at the first invocation of IHSDM, the system will query as to its creation.

Adding user identifiers to the IHSDM system is performed in the *Configuration Utility*. The *Configuration Utility* can be found in the *Start Programs* menu. New users can be added by selecting the **Add** button on the Users wizard panel. Selecting the **Add** button displays the Add/Edit an IHSDM User Definition dialog.

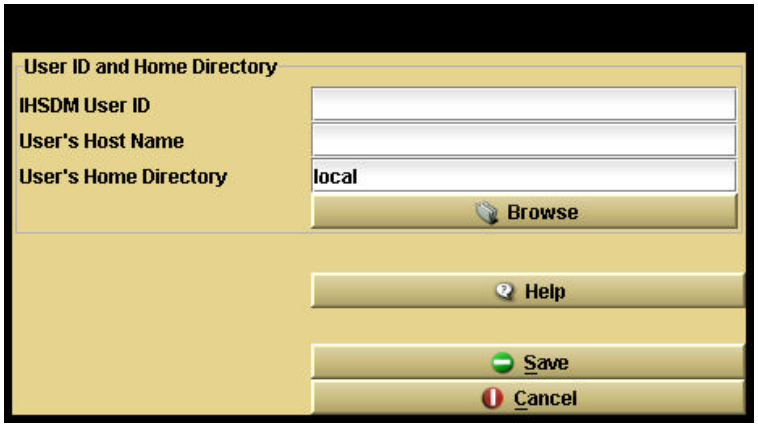


**Figure 14 Add/edit an IHSDM user definition Dialog**

The **Add/edit an IHSDM user definition** dialog includes the following widgets: Help, Save, Cancel, IHSDM User ID, User's Host Name and User's Home Directory.

#### 3.1.3.1 Widgets

- **Help** - Widget type: button. This button launches an HTML browser to display information about adding new users to the IHSDM system.
- **Save** - Widget type: button. This button initiates the addition of a new user and closes the dialog.
- **Cancel** - Widget type: button. This button cancels the addition of a new user and closes the dialog.
- **IHSDM User ID** - Widget type: text field. This is a read-only field which contains the current user ID.
- **User's Host Name** - Widget type: text field. The value of this item is the host (computer) name for the IHSDM user identifier. The value '*' may be used to designate any host name.

- **User's Home Directory** - Widget type: text field (w/button). The value of this item is the name of the user's home directory. The value 'local' may be used to designate that the home directory is on the client machine and the path is relative to the IHSDM installation directory.

## 3.2 Configuring a Client

When a server operational environment has been selected, each client machine must be configured to use IHSDM from the server workstation. The first time IHSDM is started from the client machine, a text-based dialog appears (see Figure 15, *IHSDM Client Configuration Dialog*). This dialog solicits the name of the computer and the shared drive that have been established for IHSDM. After these names have been entered, IHSDM is configured for client operation.

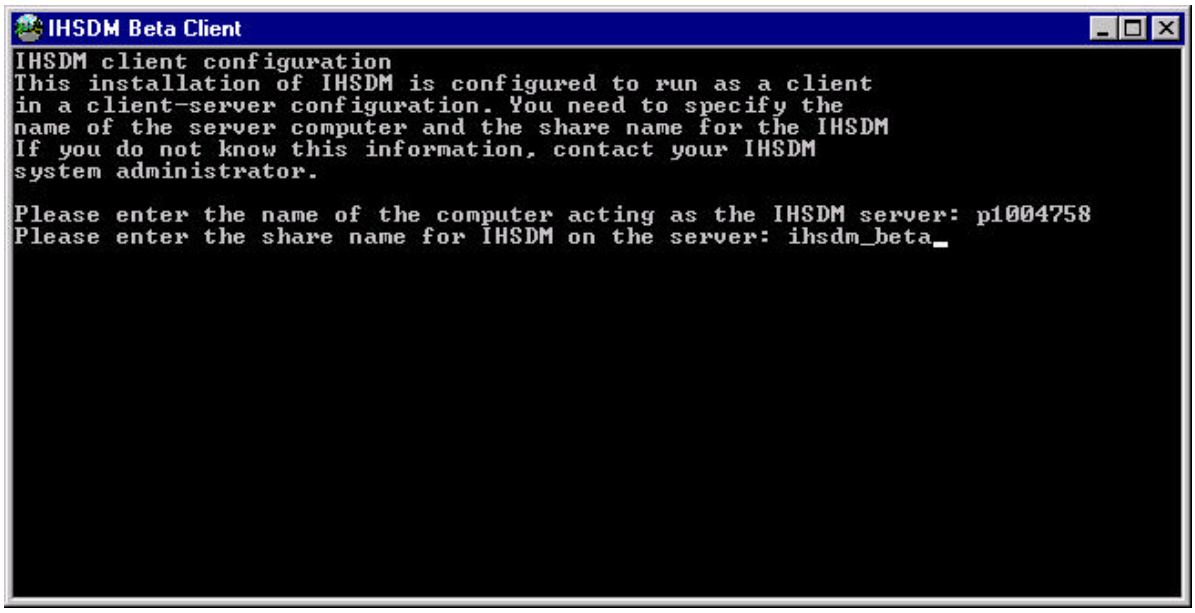


**Figure 15 IHSDM Client Configuration Dialog**

# 4. IHSDM Documentation

IHSDM documentation is organized in a series of manuals oriented to specific user types and information needs. User types include first-time users, regular users, and system administrators. Information needs include: installing and configuring IHSDM, the mechanics of using the various features of the software, engineering insights to ensure appropriate use of the software and interpretation of outputs, and administering and maintaining the software installation.

The structure of the series of manuals is illustrated in the User Documentation Map. The manuals are listed and described below by the users and information needs they support:

- Manuals for First-Time Users: These manuals are oriented to assist new users in installing and configuring IHSDM and running it for the first time. Manuals include:
  - Getting Started Guide - An overview of the installation and use of IHSDM. This Guide should be sufficient for stand-alone installations. For client-server installations, the more detailed IHSDM Installation Manual will be needed.
  - Installation Manual - A detailed reference to the installation and configuration of IHSDM.
  - Running IHSDM Software Manual - An overview of the basic operations in running the IHSDM software. The intent is to provide new users the information they need to

run IHSDM for the first time.

- User's Manuals: These Manuals are intended as references that regular users can consult when issues arise about the mechanics of using the IHSDM graphical user interface. Manuals include:
  - IHSDM User's Manual - A reference for using the primary IHSDM graphical user interface. Other User's Manuals provide additional details on specific components of the IHSDM graphical user interface:
    - Policy Review Module (PRM) User's Manual - A reference for using the (stand-alone) Policy Review Module software graphical user interface.
    - Crash Prediction Module (CPM) User's Manual - A reference for using the (stand-alone) Crash Prediction Module software graphical user interface.
    - Design Consistency Module (DCM) User's Manual - A reference for using the (stand-alone) Design Consistency Module software graphical user interface.
    - Intersection Review Module (IRM) User's Manual - A reference for using the (stand-alone) Intersection Review Module software graphical user interface.
    - Traffic Analysis Module (TAM) User's Manual - A reference for using the (stand-alone) Traffic Analysis Module software graphical user interface.
    - Using the IHSDM Graphical User Interface - A reference for the operation of the individual components of the graphical user interface.
    - User Properties and Defaults Manual - A reference for editing IHSDM system properties, user properties, and user default values.
  - Frequently Asked Questions - A list of frequently asked questions related to the IHSDM software.
  - IHSDM Troubleshooting Guide - A reference for troubleshooting IHSDM software problems.
- Documentation of IHSDM Data: These documents provide detailed descriptions of all IHSDM data elements and references for importing and editing data.
  - IHSDM Highway Model - A reference for the IHSDM highway model, including descriptions of the data elements comprising the model.
  - LandXML Support - A reference for IHSDM support for the LandXML data standard.
  - Editing Highway Elements - A reference for using the Edit/View Highway Elements graphical user interface.
  - GEOPAK-TO-IHSDM Application Programmer's Interface (API) User's Manual - A reference for using the Application Program Interface (API) to export data from GEOPAK into a format that IHSDM can import.
- Engineer's Manual: The intent of these Manuals is to provide the engineering information necessary to make appropriate use of IHSDM evaluation capabilities and interpretation of results. Manuals include:
  - Policy Review Module (PRM) Engineer's Manual - A reference for the engineering issues of using the Policy Review Module.

- Crash Prediction Module (CPM) Engineer's Manual - A reference for the engineering issues of using the Crash Prediction Module.
- Design Consistency Module (DCM) Engineer's Manual - A reference for the engineering issues of using the Design Consistency Module.
- Intersection Review Module (IRM) Engineer's Manual - A reference for the engineering issues of using the Intersection Review Module.
    - **Intersection Policy Review Sub-Manual** - Describes the procedures for checking an intersection design element against relevant policy, including references to the section of the AASHTO policy that contains the information used to develop the module and check the design. **(The Intersection Policy Review Sub-Manual is not available in the current release of IHSDM.)**
    - Intersection Diagnostic Review Engineer's Sub-manual - Describes in detail the concerns that the diagnostic review component considers and the models used to evaluate those concerns.
- Traffic Analysis Module (TAM) Engineer's Manual - A reference for the engineering issues of using the Traffic Analysis Module.

• Manuals for System Administrators: These Manuals provide system administrators the information they need to maintain IHSDM installations.

- System Administrator's Manual - A reference for using the IHSDM Administration Tool software graphical user interface. This manual also discusses customizing variable components of IHSDM, including analysis report templates, data dictionaries, and policy files.
- PRM/IRM Policy Table Maintenance - A reference for editing design policy tables used in the Policy Review Module and Intersection Review Module.

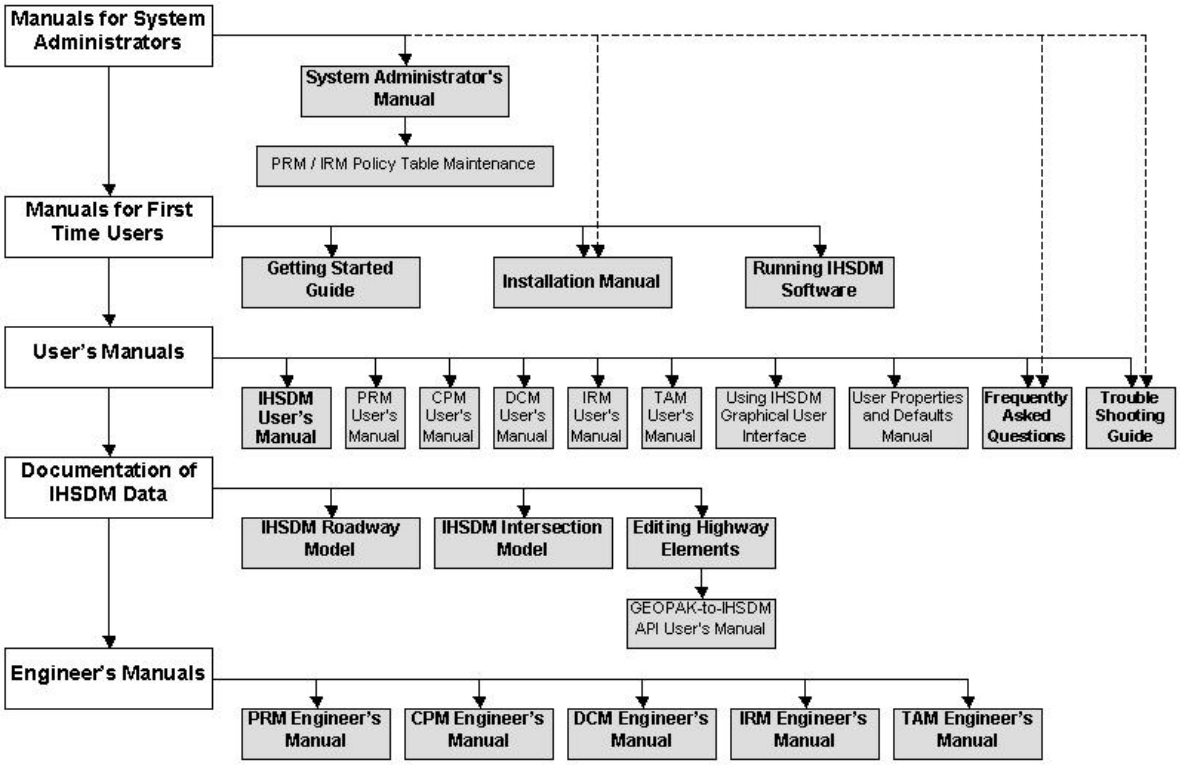


**Figure 16 User Documentation Map**

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